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FIELD OF THE INVENTION

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Even with this addition to shelf space, however, competition for shelf space still remains keen. Therefore, a way of adding even more shelf space is still desired.

Therefore, it is an object of the invention to provide a shelf structure and a system of its use.

To these and other ends, the invention provides a shelf for supporting goods. The shelf has a front and, lower than the shelf and at least forward of the front of the shelf, is a panel structure for supporting additional items.

Preferred embodiments that illustrate but do not limit the invention will now be described with reference to a drawing, in which:

FIG. 1 is a top, front, right-side perspective view of a preferred embodiment; and

FIG. 2 is an enlarged top, front, right-side perspective view of a portion thereof.

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Because the glide rack will hold the goods for this embodiment, there is substantial space between the rods that are required only to provide sufficient support strength. To assure this, the front and middle rods are connected by a pair of rods 10d in the plane of the shelf and panels 10e and 10f extends along the front and rear rods 10a, 10c. The panel 10f is substantially in the plane of the shelf but, preferably slightly higher to facilitate inserting cans at the rear 14.

Support legs 22a are formed by bending opposite ends of the rods 10a, 10b, 10c to project downward from a bottom at 20 of the shelf to lowermost ends. The support legs support the shelf at 16 above another structure (not shown) such as a shelf in a walk-in cooler, for example. However, in view of the framework at 22b described below, it would be equivalent in another embodiment (not shown) to have the shelf at 16 fastened under the other structure to hang the framework under the other structure, the shelf at 16 in such an arrangement also being considered herein as superimposed relative to the other structure. For example, the panels 10e, 10f could have holes (not shown) for threaded fasteners to a cooler shelf.

The lowermost ends of the support legs 22a are connected to the framework at 22b. In this embodiment, the support legs 22a have equal lengths so that the shelf at 16 and

framework at 22b or, more specifically, rods 36 thereof define first and second parallel planes. In other, equivalent embodiments (not shown), however, the support legs may have unequal lengths so that the rear at 14 of the shelf at 16 is higher (more spaced from the rods 36) than the front at 12 of the shelf, for example.

The framework has a front at 24 and rear at 26 that are parallel to the front at 12 and rear at 14 of the shelf at 16. However, in other, equivalent embodiments, the fronts or rears could be angled or stepped relative to each other. At the front 24, the framework has a first pair of rods 27a and, spaced a little to the rear, a second pair of rods 27b. The pairs of rods 27a, 27b are also spaced from each other for reasons explained below.

About in the middle and at the rear of the of the framework at 22b are middle and rear support bars 27c, 27d of angular cross sections that extend across the framework for strength. Opposite ends of the middle support bar 27c in this embodiment have dependent tabs 27c' to engage or straddle the other structure on which the framework is supported to prevent sideways slippage. In a typical walk-in cooler, for example, the other structure (not shown) is a wire frame shelf. The tabs can then project between front-to-rear wires of the structure shelf for providing the lateral stability.

At the front 12 and on the panel 10e on the front rod 10a of the shelf at 16 is panel structure at 28 and at the front 24 of the framework at 22b is a panel structure at 30. Each of these panel structures provides strength and a stop.

The stop on the panel structure at 28 is the rearward face of a lip 32 formed by an upwardly (i.e., in a direction with at least a component from the second to the first plane); bent front edge of the panel structure that rises above the plane of the shelf at 16. The bend may also serve as a score line for removal of the lip 32, or another arrangement may be provided for such removal. Removal may be useful when the shelf at 16 is fastened under some the other structures (not shown) such as a visi-cooler shelf, for example, so that the shelf 16 can be abutted under the cooler shelf in the other embodiment (not shown) described above to enable the cooler shelf and framework to be substantially parallel.

The stop on the panel structure at 30 is also the rearward face of a lip 34. However, its panel structure at 30 is more extensive than the panel structure at 28 of the shelf at 16.

The panel structure at 30 has rods 36 on top of the rods 27a, 27b and support bars 27c, 27d of the framework that extend from the front at 24 to the rear at 26 of the framework. In this embodiment, these rods 36 are spaced to support the cylindrical surfaces of four files of cans (not shown), but other items of cylindrical, prismatic or other shapes could be substituted for use in equivalent fashion. Therefore, when the framework at 22b is supported on an inclined shelf of a walk-in cooler, for example, the cans toward the rears of the files roll down the rods 36 to the lip 34 as the cans at the front 24 are respectively removed from the files. To keep the cans in the four files, the framework at 22b includes three front-to-rear divider rods and lateral side rods 37 at intervals across the framework defining channels for the files of cans.

However, if the framework at 22b is placed on a shelf of a walk-in cooler, for example, it will be appreciated that the rods 36 of the panel structure at 30 with the lip 34 do not have to extend to the rear of the framework. The shelf of the walk-in cooler can provide the roll-down support for the cans until they reach the front of the shelf of the walk-in cooler. Therefore, in other embodiments (not shown), the panel structure at 30 that provides the lip 34 may stop in the

rearward direction substantially at a projection thereon of the line of the lip 32 or only part way toward the rear at 26 of the framework in arrangements that are equivalent to that described as preferred herein.

In order to remove the cans from the front at 24, the panel structure at 28 of the lip 32 is spaced rearwardly from the lip 34 of the panel structure at 30. Therefore, the size of such rearward spacing depends on the products to be removed from behind the lip 34 and can be varied from that shown in other, equivalent embodiments (not shown).

The panel structure at 30 also has a lowermost rim 38 on a plane with the pairs of rods 27a, 27b of the framework at 22b or, as shown, somewhat therebelow. It also has a front panel 40 that is shown substantially vertical, but preferably, in another embodiment (not shown), is curved for aesthetic complement to the can goods with which the embodiment may be used. Variations in the vertical profile of the front panel 40 are equivalents.

The framework at 22b may also include other reinforcements, some of which are shown in the drawing, or others. Such variations in the framework are equivalents.

The framework at 22b is only one of many possible ways to arrange the supports 22a for a particular use. Other arrangements would be equivalent, such as the hanging arrangement already described above, for example. Various rods and bars described and shown for the preferred embodiment are considered desirable, but are not required in the forms described or shown. Other forms are equivalent. These rods and bars and other parts of the preferred embodiment are preferably coated metal, but plastic or other materials may also be used.

Variations, combinations or permutations as would occur to those skilled in the art are equivalent element-by-element to the described preferred embodiments.

Description of Use and a System Thereof

Use of the described shelf structure on a horizontal or inclined shelf of a visi-cooler or walk-in cooler has already been suggested. When the cooler shelf or other supporting structure is horizontal, it is desirable to put a block or wedge on the cooler shelf under the rear at 26 of the framework or the heights of the vertical supports 22a increase from front to rear to provide the incline to the shelf at 16 and the rods 36 that will cause the goods and cans or other items to move to the fronts at 12 and 24 as described above. When the cooler shelf or other supporting structure is inclined, the described shelf structure can be placed directly thereon to utilize its incline. Other ways of using the described shelf structure are contemplated and still more may occur to those in the art.

In a visi-cooler that has no space between the inside of its closed glass door and the fronts of its horizontal or, usually, inclined shelves, the rim 38 of the panel structure at 30 is abutted behind a ridge on the front of one of the cooler shelves or, preferably, the ridge is straddled between the rim 38 and the foremost rod of the pair of rods 27a or by the first pair of rods 27a on the framework so that the shelf structure does not slide down the incline of the shelf of the visi-cooler and still fits behind its closed glass door.

Items, such as the four files of cans previously described, are then placed on the rods 36 at the rear 26 of the framework to roll or slide down the incline to the lip 34 of its panel structure at 30. Particularly when the items are horizontally arranged cans to roll down the incline, it will be appreciated that the height of the supports 22a can be limited to provide a clearance between the rods 36 and the underside 20 of the shelf substantially the diameter of the cans. If, in